

Tennessee State Parks' All Taxa Biodiversity Inventory

By LinnAnn Welch

In 2003, the All Taxa Biodiversity Inventory began in Tennessee State Parks with the intention of inventorying and monitoring biological features.

The program not only provides much needed data to help better protect the creatures we know reside in our parks, but it will help us discover those thousands of plants and animals yet to be found in parks or even yet known to science.

The inventory utilizes existing park staff, local universities and schools, community volunteers, and others with expertise or interest in biological topics.

The ATBI is an on-going project in the Great Smoky Mountains National Park, the first comprehensive biological inventory of its kind to be undertaken in North America. With the creation of a new section of Tennessee State Parks, Natural and Cultural Resource Management, a similar program started with the support of biologists from the Smokies and from non-profit Discover Life in America.



Professor Rex Barber and Volunteer State Community College students record data in one of the permanent study plots for plants at Edgar Evins State Park. *(Photo Courtesy of Volunteer State Community College)*

For years, Charlie Tate, now director of NCRM, had envisioned state parks following the Smokies example. Resource Manager and long-time parks historian Jack Gilpin was chosen to supervise the ATBI staff. I was given the task of establishing the studies, developing protocol, and recruiting universities for each park.

At the beginning of our ATBI efforts, representatives from approximately 20 universities, many state parks, Great Smoky Mountains National Park, and Discover Life in America converged at Montgomery Bell State Park for a three-day meeting about ATBI. A plan was discussed to develop protocols for studying all taxa, or scientific groups of organisms. Instruction was given on using latest technology such as GPS units to document locations, and database options were demonstrated. Several successful collaborations with universities were established at the time. State parks could not have launched our ATBI efforts without Jeanie Hilten, Keith Langdon, Chuck Parker, Becky Nichols, Chuck Cooper, and others instructing participants at the meeting.

ATBI in Tennessee State Parks has come a long way since the initial meeting. Over 25 parks now participate on varying levels. Protocols for studying plants, mammals, birds, reptiles and amphibians, certain insects, river and stream systems, and other taxa have been written and are being used. The plant protocol in particular is important because it establishes randomly selected permanent plots based on vegetation types for a good representation of diversity. The plots can be monitored over time and provide areas for researchers in other fields to conduct their studies. Brian Bowen and Kevin Fitch of the Division of Natural Areas staff were instrumental in development of the plant protocol.

Dr. David Hill, professor emeritus from Belmont University, joined state parks and NCRM as a biologist focusing on the plant inventories and protocol as well as developing the database. He has been instrumental in setting up permanent study plots in many parks, editing the protocol, creating our data sheets, and supervising the creation of the database. Dr. Hill adds to the program his years of experience instructing and conducting studies in botany, microbiology, ecology, and many other biology-related topics.

The database was developed using the Great Smoky Mountain National Park database as a model. It was modified by David Brewer, a programmer with the Information Systems section of TDEC. With his assistance, we were able to develop a database, accessible from all state parks, which researchers can use to maintain a list of all organisms found and their locations.

This database is currently a work in progress. Once completed, anyone will be able to access the database to see which wildflowers, birds, mammals, etc, have been found and in which park(s) they can be seen.

Last year Richard Connors, naturalist and photographer, joined our staff to work part-time on ATBI. He is a former president of the Tennessee Ornithological Society. Although he is usually thought of as an expert on birds, he has become our authority on dragonflies. His photographic skills allow him to keep a record of species encountered without many having to be sacrificed for identification. Connors has expanded range maps by finding species such as the Swift Setwing (*Dythemis velox*) in several counties not documented before such as at Montgomery Bell State Park in Dickson and the Harpeth River State Park in Davidson and Cheatham counties. He also easily found the rare and long not seen Tennessee Clubtail Dragonfly (*Gomphus sandrius*) at Henry Horton State Park, a species we plan to make sure has a safe home in the park.

Working closely with Connors is Rita Venable, naturalist and president of the Middle Tennessee chapter of the North American Butterfly Association, a member-based not-for-profit organization working to increase public enjoyment and conservation of butterflies. Venable, and members of NABA, visit many parks throughout the summer and have collected an impressive list and photographs of butterflies.

This summer, zoologist Brian Carver of Freed Hardeman University has been conducting bat studies at Pinson Mounds State Archaeological Area and Big Hill Pond State Park. Carver, a top bat biologist in the country, wrote state park protocol for studying bats and reviewed our protocol for mammal inventories. Bat research is of particular importance to Tennessee State Parks because all creatures are protected on park property, even those that are not as popular with the public.

Edgar Evins State Park, Montgomery Bell, and Henry Horton were among the very first parks to participate in the ATBI. Research at Montgomery Bell and Henry Horton has been documented in past issues of *The Tennessee Conservationist* (TCM, July/August 2005; and TCM, January/February 2005). Park Manager Carl Halfacre at Edgar Evins has been very supportive of naturalist endeavors including ATBI and environmental education. Although Halfacre had several research projects already underway, he began recruiting other universities for help with ATBI. The park now has plant, bird, snake, and insect studies on-going.

Rex Barber of Volunteer State Community College in Gallatin was the first botanist to use and complete the protocol procedures in permanent study plots. He has studied 10 areas at Edgar Evins. Due to his work, we have a better idea of the diverse plant life and canopy structure of the forests. The valuable information gathered on size classes and presence of invasive exotic plants will help determine management decisions in the future. The study also helps with American Chestnut distribution studies. Many interesting shrubs have been identified as well as trees such as Black Maple (*Acer nigrum*) and deciduous magnolias. Barber has presented at the Tennessee Academy of Sciences the past two years and has promoted ATBI more than anyone. Student involvement and support from Volunteer State is without equal. The biology department plans to study Bledsoe Creek State Park in the near future.

Professor Robert Brewer of Cleveland State Community College in East Tennessee obtained funding from ATBI to set up permanent plant plots at over 10 parks in his region. Brewer specializes in aquatic creatures, reptiles, and amphibians. After locating the permanent plots, he began studies in several topics at Red Clay, Warriors' Path, and Standing Stone State Parks. At Standing Stone with the support of former manager Billy Martin, Ranger-Naturalist Shawn Hughes has incorporated ATBI into his naturalist rallies and organized three-day blitzes with volunteers to list all life encountered. Brewer and Hughes have trained over 60 volunteers on how to help with ATBI at the park.

Harpeth River State Park Manager Jane Polansky, along with rangers Bill Morton and Lisa Housholder, have helped tremendously with the study of aquatic creatures in the river. Jonathan Chandler, aquatic biologist with ERM Southeast, approached ATBI with a proposal to volunteer to write aquatic protocol and begin a series of studies in several Middle Tennessee parks. With the help of the staff and others recruited by volunteer coordinator Nancy Schelin of NCRM, Jonathan has identified dozens of darters and other fish in the river. A report on fish, macroinvertebrates, and current water quality will be a result of the studies.

There are many other studies across the state that should be mentioned. Dr. Allen Moore of Tennessee Wesleyan College has nearly completed the plant study at Hiwassee-Ocoee State Park. Chris Hill at Natchez Trace State Park is setting up plots and plans to do much of the work himself. The same is true with Sharon Reagan at Tim's Ford. Burgess Falls has a fairly complete new plant list and manager Bill Summers is supporting insect studies this year. Professor Keith Pecor from Rhodes College is refining the reptile and amphibian protocol and plans to study Memphis area state parks Meeman- Shelby and T.O. Fuller.

Perhaps most impressive is the fungi study at Long Hunter State Park by Dr. Wayne Rosing from Middle Tennessee State University and supported by Manager Thurman Mullins and Ranger-Naturalist April Welch. Mycologists are rare compared to other field biologists with fungi being one of the least studied organisms on parkland. We hope Dr. Rosing moves on to other parks when his work is complete at Long Hunter.

Regretfully, there is not enough space to mention all those who are participating in ATBI. All researchers are appreciated and any studies are considered valuable. Universities or other volunteers are needed for many parks across the state. To learn more about the data collected or to volunteer, contact LinnAnn Welch at 615-532-0241 or Dr. David Hill at David.R.Hill@state.tn.us.

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